processing the signals produced by any number of standard detector schemes, such as a laser reflecting off the back side of the cantilever and onto a bi-cell or quad detector 105. An error signal from the detector is sent to the control module 150. If the oscillation amplitude of the probe 120 is too high, for example, the non-zero error signal is integrated and accumulated by the control module 150. When enough error signal is integrated, the control module150 commands the Z-module 140 to lower the probe 120 towards the surface 170. The error is integrated so that abrupt changes are not detected too quickly, which may cause the Z-module 140 to engage in unwanted oscillation. If the probe 120 encounters a deep recess 175 in the surface 170, it is desirable to lower the probe 120 to the bottom of the recess 175 as quickly as possible. In conventional devices, this is accomplished by increasing the gain of the error signal. Unfortunately, high gain makes the system susceptible to instability of the Z-module. In the present invention, however, no such Z-module instability occurs when the probe is lowered quickly because instead of increasing gain of the error signal, probe oscillation is increased by boosting the probe drive signal. This causes the error signal to accumulate more rapidly in the control module 150 which causes the Z-module140 to lower the probe 120 more rapidly. Therefore, the Z-module 140 responds to and reduces parachuting of the probe 120 without causing the probe to oscillate or become unstable.

Please amend the specification at page 9, lines 8-17, as follows:

Fig. 2 is an exemplary block diagram of a paraboost module 110 according to a preferred embodiment. The paraboost module 110 includes a detector module 210 and a boost module 220. In operation, the detector module 210 detects the phase of the oscillating probe 120 with a phase detection circuit 212. When the detector module 210 detects the reduction of a vibration of the phase signal from the probe 120, the detector module 210 instructs the boost module 220 to increase the oscillator 130 drive signal supplied to the control module 150 to increase the amplitude of the oscillating probe 120. By boosting the drive to the oscillating probe 120, the vibration amplitude of the cantilever 120 is increased, the error signal is increased, and the control module 150 integrates the error more quickly. Accordingly, the Z-module 140 is instructed to lower the probe 120 towards the surface 170 faster.

Please amend the specification at page 12, lines 3-13, as follows:

Fig. 12 is an exemplary illustration of resulting signals when the paraboost module 110 is used while other experimental conditions are identical to those associated with Fig. 11. The signals include the mapped surface signal 1210, the phase signal 1220, and the amplitude of the drive signal 1230. As illustrated, when the paraboost module 110 detects a leveling of the phase signal 1220 at point 1225 indicating an abrupt drop in the surface 170 at point 1215, the amplitude of the drive signal 1230 is adjusted at point 1235. In particular, the leveling of the phase signal is a reduction of the variation of a phase signal from the probe 120. Thus, the leveling is a quieting of the phase signal from the probe 120. Therefore, the paraboost module boosts the cantilever drive signal, the control module 150 integrates the error more rapidly and the Z-module 140 lowers the probe 120 faster. Accordingly, as shown in signal 1210, an abrupt variation in the surface 170 is more accurately detected.